NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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TITLE (4)

Inoperability of Two Divisions of the Unit 3 Core Spray System Due to Personnel Error

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									NA	NA
06	25	1999	1999	-- 004 --	00	07	26	1999	NA	DOCKET NUMBER NA

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
POWER LEVEL (10)	100	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)	
		20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)	
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71	
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER	
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A	
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Donald Norwood, Sr. Project Manager	(256) 729-7905

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On June 25, 1999, at 1352 hours Central Daylight Time (CDT), Unit 3 Core Spray (CS) Divisions I and II were technically inoperable at the same time. This condition was the result of personnel error during performance of the surveillance test, Backup Control Panel Testing [3-SR-3.3.3.2.1(75 I)] for CS Division I. During performance of the surveillance test, the electrical supply breaker for CS Division II pump 3B was racked out instead of the breaker for CS Division I pump 3C as required by the surveillance test. Prior to the event, CS Division I pump 3A had been made inoperable per the surveillance test. This action had made CS Division I inoperable. At the time of the event, pump 3A had been returned to a condition where it was available (and hence CS Division I was available), and would have functioned if required. However, CS Division I was still inoperable per plant Technical Specifications. The operations' staff recognized that two divisions of CS were inoperable and appropriately entered LCO 3.0.3. At 1418 hours CDT, CS Division II was returned to operable status and LCO 3.0.3 exited. The root cause of this event was personnel error. Prior to, and during the event, all other Emergency Core Cooling Systems (ECCS) were operable. Accordingly, there was no significant reduction in the degree of protection provided to the public health and safety. Furthermore, the safety of the plant, its personnel, and the public was not compromised.

This report is submitted pursuant to 10 CFR 50.73 (a)(2)(i)(B), as any operation or condition prohibited by the plant's Technical Specifications.

I. PLANT CONDITION(S)

At the time of the event, Unit 1 was shutdown and defueled. Unit 2 was in Mode 1 at 100 percent reactor power, approximately 3456 megawatts thermal. Unit 3 was in mode 1 at 100 percent reactor power, approximately 3456 megawatts thermal.

II. DESCRIPTION OF EVENT

A. Event:

On June 25, 1999 at 1145 hours Central Daylight Time (CDT) surveillance test Backup Control Panel Testing [3-SR-3.3.3.2.1(75 I)] for Core Spray (CS) [BM] Division I was started. At 1230 hours CDT, CS pump 3A [P] was made inoperable per the surveillance test by racking out its electrical supply breaker [BKR]. This action made CS Division I inoperable. At 1349 hours CDT, the electrical supply breaker for CS pump 3A was returned to its normal racked in position. At 1351 hours CDT, CS pump 3A was declared available but still not operable per Technical Specifications.

3-SR-3.3.3.2.1(75 I) then required racking out the electrical supply breaker [BKR] for CS Division I pump 3C [P]. However, at 1352 hours CDT, the Assistant Unit Operator (AUO) [utility, non-licensed] performing the breaker manipulations racked out the electrical supply breaker [BKR] for CS Division II pump 3B [P] instead. This action resulted in CS Division II being inoperable. In conjunction with the technically inoperable CS Division I, this resulted in a condition prohibited by the plant's Technical Specifications. Limiting Condition for Operation (LCO) 3.0.3 was entered at that time.

The electrical supply breaker to the CS Division II pump 3B was returned to its normal racked in position. CS Division II was tested for operability per 3-OI-75. CS Division II was declared operable at 1418 hours CDT and LCO 3.0.3 was exited at that time.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

C. Dates and Approximate Times of Major Occurrences:

June 25, 1999, 1145 hours CDT	Surveillance 3-SR-3.3.3.2.1(75 I), Backup Control Panel Testing for Core Spray Division I was started.
June 25, 1999, 1230 hours CDT	Breaker for Core Spray Division I pump 3A racked out per Surveillance 3-SR-3.3.3.2.1(75 I). Core Spray pump 3A, and hence Core Spray system Division I, declared inoperable.

June 25, 1999, 1349 hours CDT	Breaker for Core Spray Division I pump 3A returned to the normal racked in position.
June 25, 1999, 1351 hours CDT	Core Spray pump 3A, and hence Core Spray Division I available for service per maintenance rule.
June 25, 1999, 1352 hours CDT	Breaker for Core Spray Division II pump 3B racked out. Surveillance 3-SR-3.3.3.2.1(75 I) specified breaker for Core Spray Division I pump 3C to be racked out. This action caused Division II of the Core Spray system to be inoperable.
June 25, 1999, ~1400 hours CDT	With both Divisions of the Core Spray system inoperable, LCO 3.0.3 was entered. Unit 3 SRO directed that Core Spray Division II pumps be run per Operating Instruction (OI) 75 to allow Core Spray Division II to be declared operable.
June 25, 1999, 1416 hours CDT	Core Spray Division II pumps 3B and 3D placed in service per 3-OI-75, Section 8.12.
June 25, 1999, 1418 hours CDT	Core Spray Division II pumps 3B and 3D secured. Core Spray Division II declared operable. LCO 3.0.3 exited.

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

During performance of Surveillance 3-SR-3.3.3.2.1(75 I), Unit 3 Control Room Operators [utility, licensed] noticed that expected annunciators for CS Division I pump 3C had not alarmed, but annunciators for CS Division II pump 3B that were not expected to be in alarm status had in fact alarmed.

F. Operator Actions

At 1352 hours CDT, the Assistant Unit Operator (AUO) [utility, non-licensed] performing the breaker manipulations racked out the electrical supply breaker for CS Division II pump 3B instead of the breaker required by the surveillance (CS Division I pump 3C breaker). This was a cognitive error in that the AUO had mentally incorrectly associated CS pump 3B with Division I instead of CS pump 3C. This error was contrary to the approved surveillance. There were no unusual characteristics of the work location (e.g., heat, noise) that directly contributed to this error.

G. Safety System Responses

None.

III. CAUSE OF THE EVENT

A. Immediate Cause

The immediate cause of this event was the racking out of the incorrect CS pump electrical supply breaker (CS pump 3B breaker instead of CS pump 3C breaker).

B. Root Cause

The root cause of the event was personnel error. The wrong Core Spray pump breaker was removed due to a lack of effective self-checking with no peer check performed.

C. Contributing Factors

The two 4 KV electrical board rooms on Unit 3 have both Division I and Division II boards in the same room {Shutdown (S/D) Boards [ECBD] 3A and 3C in one, S/D boards 3B and 3D in the other}. The boards in each room are separated by an automatically closing fire door within the same room. The lack of visual separation of these rooms contributed to the mind-set that boards 3A and 3C were in the same division.

The 3B Emergency Core Cooling System (ECCS) pumps are on 3C 4 KV S/D board (Division II) and 3C pumps are on 3B 4KV S/D board (Division I).

The pre-job brief was inadequate for the evolution.

Failure of management observations to detect problems with effective self-checking.

IV. ANALYSIS OF THE EVENT

Prior to performance of the surveillance test, a pre-job brief was performed. However, no formal prejob briefing package was written. Specific steps of the procedure were not pointed out, including no reference made to the fact that the Unit 3 S/D Board rooms have two divisions in each room. This coupled with the fact that CS pump 3B is fed from the 3C 4KV S/D Board and CS pump 3C is fed from the 3B 4KV S/D board led to an incorrect association of CS pumps to their divisional assignments by the individual performing the operator actions in the surveillance test. This incorrect association was that the CS pumps 3A and 3B were Division I pumps instead of the correct CS pumps 3A and 3C.

V. ASSESSMENT OF THE SAFETY CONSEQUENCES

The purpose of the Core Spray system is to protect against over-heating the fuel in the event of a Loss of Coolant Accident (LOCA). There are two independent, redundant, 100% capacity Core Spray Divisions (Division I and Division II). Core Spray in conjunction with other ECCS {Automatic

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V. ASSESSMENT OF THE SAFETY CONSEQUENCES (continued)

Depressurization System (ADS) [SB], Low Pressure Coolant Injection (LPCI) [BO], and High Pressure Coolant Injection (HPCI) [BJ]} provide adequate core cooling over the entire LOCA break spectrum.

At the time of this event, CS Division I was inoperable per Technical Specifications. However, CS Division I was in a condition where it was available had it been called upon to function. CS Division II was made inoperable for only a short period of time (minutes) prior to it being recognized that the wrong electrical supply breaker had been racked out. Upon recognizing this, the electrical supply breaker to CS Division II pump 3B was returned to the normal racked in position. At this time, CS Division II was then available had it been called upon to function. Within 26 minutes after the wrong electrical supply breaker was racked out, CS Division II was tested and declared operational per Technical Specifications. Prior to, and throughout this short duration event, all other ECCS remained operable.

Accordingly, there was no significant reduction in the degree of protection provided to the public health and safety. Furthermore, the safety of the plant, its personnel, and the public was not compromised.

VI. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

The electrical supply breaker to CS Division II pump 3B was returned to its normal racked in position. The Unit 3 SRO directed that CS Division II pumps be placed in service to demonstrate operability. CS Division II successfully demonstrated operability and at 1418 hours CDT CS Division II was declared operable.

B. Corrective Actions to Prevent Recurrence

Future pre-job briefings will include warnings about this specific human factors issue. [1]

The Operations' Training Department will include this event in the "Plant Events" simulator scenario training for Licensed operator requalification training and in the required reading program of non-licensed personnel. [1]

Operations' management will establish a self-assessment that will focus on management observations to detect problems with effective self-checking. [1]

Peer checks on actions associated with breaker operations, placement of jumpers, pulling fuses, or other actions which cause irreversible conditions on equipment will be required for surveillances and other critical tests. [1]

Applicable initial licensed and non-licensed operator training lesson plans will be revised to include issues associated with this event. [1]

[1] TVA does not consider these corrective actions regulatory commitments. The completion of these items will be tracked in TVA's Corrective Action Program.

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VII. ADDITIONAL INFORMATION

A. Failed Components

None.

B. Previous LERs on Similar Events

LER 50-296/97004, issued on May 14, 1997, was written to document the unplanned manual start of Emergency Diesel Generator (EDG) 3D as a result of personnel error during surveillance testing.

C. Additional Information

None

D. Safety System Functional Failure:

This event did not result in a safety system functional failure in accordance with NEI 99-02.

VIII. COMMITMENTS

None.